

We claim:

1. A liposome composition comprising DOTAP and at least one cholesterol or cholesterol derivative.

5 2. The liposome composition according to claim 1, further comprising a biologically-active agent, thereby forming a sandwich liposome.

10 3. The sandwich liposome composition according to claim 2 wherein the composition has a ρ value equal to 2.

15 4. The liposome composition according to claim 2, wherein the biologically-active agent is a nucleic acid.

15 5. The liposome composition according to claim 4 further comprising, adding a targeting ligand thereby decorating exterior surface of said sandwich liposome with the ligand.

20 6. A DNA-sandwich liposome composition comprising a structure having lipid bilayers and DNA molecules positioned between two or more sandwich liposomes, wherein $\rho = 2$ and a size of 200 - 450 nm.

25 7. A DNA-sandwich liposome comprising DNA, DOTAP and at least one of a cholesterol or cholesterol derivative.

25 8. The DNA-sandwich liposome of claim 7 further comprising one or more targeting ligands.

30 9. A liposome produced by the steps comprising:

30 i) heating DOTAP and at least one cholesterol or cholesterol derivative forming heated lipid components;

35 ii) sonicating said heated lipid components; and

35 iii) extruding lipid components sequentially through filters of decreasing pore size.

10. The liposome of claim 9 further comprising a sandwich liposome,

35 produced by adding a biologically-active agent to the liposomes.

11. The liposome of claim 10 wherein the biologically active agent is DNA, thereby forming a DNA sandwich liposome.

12. The liposome according to claim 11 further comprising, adding a
5 targeting ligand thereby decorating the exterior surface of said DNA-sandwich liposome with the ligand.

13. The liposome according to claim 11 further comprising a second biologically active agent.

10 14. The liposome of claim 11 wherein the DNA, DOTAP and at least one cholesterol or cholesterol derivative carry a ρ value of 2.

15 15. A method for preparing invaginated liposomes comprising the steps
15 of:

- i) heating a mixture of DOTAP and at least one of cholesterol or cholesterol derivative forming heated lipid component;
- ii) sonicating said heated lipid components; and
- iii) extruding lipid components sequentially through filters of decreasing pore size forming invaginated liposomes.

20 16. The method of claim 15, further comprising adding DNA to said invaginated liposomes forming DNA-sandwich liposomes.

25 17. A method for preparing invaginated vase-like liposomes comprising the steps of:

- i) heating a mixture of 1,2-bis(oleoyloxy)-3-(trimethylammonio)-propane and at least one of cholesterol or cholesterol derivative forming heated lipid components;
- ii) hydrating said heated lipid components forming hydrated lipid components;
- iii) sonicating said hydrated lipid components forming sonicated lipid components;
- iv) extruding said sonicated lipid components sequentially through filters of decreasing pore size forming invaginated vase-like liposomes; and
- v) adding DNA to said invaginated vase-like liposomes forming

DNA-sandwich liposomes.

18. A composite liposome comprising a first lipid bilayer liposome having an outer surface; a biologically active agent surrounding the outer surface of said
5 first lipid bilayer liposome; and a second lipid bilayer encapsulating the biologically active agent, wherein said composite liposome forms an invaginated vase-like structure.

19. The composite liposome of claim 18, wherein the biologically active
10 agent is DNA.